

out effect. The poisonous action of sulphate of methyl-morphium does not appear to be very different from that of a salt of morphia; but it does not possess in any degree the convulsant action of that alkaloid. Instead of convulsions, it produces paralysis, due to an effect on the motor nerves; the peripheral terminations being primarily involved.

*Nicotia.* Though the convulsant action of nicotia does not belong to its methyl-derivatives, these derivatives possess no paralyzing effect on the motor nerves. The change, therefore, is not the same as that in the cases above noted. There is some reason to believe that the convulsions following a dose of nicotia are not due to the same cause as those produced by strychnia. The activity of nicotia is greatly diminished by the methyl additions.

The change in the *character* of the physiological action is remarkably illustrated by strychnia, brucia, and thebaia, whose purely spinal-stimulant action is converted into a paralyzing influence on the periphery (end-organs) of motor nerves; it is apparent in codeia and morphia, whose convulsant action is also similarly converted, and whose hypnotic action is apparently altogether destroyed in the case of codeia, and certainly greatly diminished in that of morphia; and it is obvious, though less so, in nicotia, whose convulsant action is diminished or removed. We may conclude from these facts that when a nitrile base possesses a strychnia-like action, the salts of the corresponding ammonium bases have an action identical with that of curare.

Iodide of methyl does not, when administered alone, produce any effects which can explain these modifications.

The experiments upon atropia and conia, and their derivatives, are very elaborate; but we shall omit any reference to them, because the starting point of original alkaloid action is, in the cases of these substances, as yet too complicated and uncertain to make the results of definite value. Enough has been presented to indicate that this ingenious line of investigation is probably a practicable one. It remains to show the results of removing the condensation of the other elements in the nitrile bases. The weak point of the inquiry seems to be in the as yet imperfect fulfilment of the second and fourth conditions of the chemical operation.

E. R.

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ART. XXIX.—*Die Criminalistische Zurechnungs-fähigkeit. Kritik der Paragraphen 46 bis 52 des Entwurfs eines Strafgesetzbuches für den Nord-deutschen Bund. Unter Beisügung eines Ausdrucks der darauf bezüglichen Motive und Gutachten der Wissenschaftlichen Deputation für das Medicinalwesen.* Von J. VON ROENNE, Königl-Kreisrichter. 8vo. pp. 92. Berlin, 1870.

*Criminal Accountability: A Critical Examination of the Paragraphs, 46 to 52 of the Draft of a Penal Code for the North German Union, with the Testimony in their Favour, as Respects their Medical Bearing, of a Scientific Deputation.* By J. VON ROENNE, Royal Circuit Judge.

THE several questions discussed in the volume before us have a very intimate relationship with medical jurisprudence; for it must be evident that it is only to the educated and experienced physician that can be intrusted the solution of the inquiry as to whether the mental and moral condition of an individual accused of crime is such as to render him at all times cognizant of the nature and consequences of his actions, and to allow him will sufficient freedom and determination to keep him from the commission of crime.

All the points bearing upon the leading question of criminal accountability, and its extent in different individuals, under a variety of circumstances, are briefly but ably discussed, under the heads of age, congenital defects of mental power, or such as occur after birth, from the results of disease or injuries, direct or indirect, of the brain; defective or misdirected education; intoxication; long habits of intemperance; hallucinations; insanity; external influences, etc. etc.

The legal and medical juriconsult will derive instruction from a careful perusal of Judge Von Roenne's critique of so much of the draft of a penal code for the use of the North German Union as relates to criminal accountability. Our laws do not, it is true, recognize the same number of grades of criminal accountability as are set forth in the draft of the proposed penal code for the "Norddeutschen Bund." With us the important question of moral and legal accountability, and when it often becomes the most difficult of solution, occurs in cases of indictments for murder in its higher degrees, and where a false judgment on the part of the medical witnesses may have the effect of consigning the innocent to an ignominious death or long confinement in the felon's cell, or to loose the guilty, and place at his mercy the lives of our citizens.

D. F. C.

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ART. XXX.—*Researches on the Influence of Mental Activity upon the Excretion of Phosphoric Acid by the Kidneys.* By LUTHER HODGES WOOD, Ph.B., M.D., of New Haven. 8vo. pp. 18.

THIS thesis was awarded the Silliman Prize of the Medical Institution of Yale College, in the laboratory of which the researches were made.

The object of Dr. Wood's investigation was to confirm or refute an hypothesis advanced by Dr. T. R. Noyes in a paper upon the excretion of urea (*American Journal of Medical Science*, Oct. 1867, p. 345), in which are described certain experiments made to ascertain the effect of sleep on this excretion. Among other results Dr. N. found that the urine of the day was uniformly alkaline, and that of the night as uniformly acid; and this, even when the diet consisted of two precisely similar meals taken twelve hours apart. To account for this fact Dr. Noyes suggested that the causes of acidity were operating in both periods, and that the great increase of alkaline phosphates in the daytime overbalanced the acid reaction thus produced; the excess of the alkaline phosphates in the daytime being caused by the activity of the brain and nervous system during that period (p. 358).

The most marked result obtained in Dr. Wood's experiments, "is the *great increase of earthy phosphates* whenever mental activity is *diminished*. This fact is constant in the whole series. Both nervous and cerebral tissue are rich in phosphorus, and this when oxidized will yield phosphoric acid; hence, *ceteris paribus*, most phosphoric acid will be found in the blood, and consequently in the urine, when these tissues are most rapidly undergoing oxidation. From this it follows that if increased activity of the organs containing these tissues gives rise to increased disintegration and oxidation of them, the products of this oxidation would be increased in the urine; and hence, that the total phosphoric acid would be thus increased. But, on the contrary, if this activity consists in a more rapid growth and less decay of these tissues, then there would be found less phosphoric acid in the urine. The total amount of phosphoric acid excreted, however, does not appear, in these experiments, to be altered by changing the mental condition, sufficiently to draw any positive conclusions; but when it is separated according to whether it is combined with alkaline or with earthy bases, we find it to be greatly varied by changing the amount of brain work. If we assume that the *alkaline* phosphates result from this metamorphosis, then, since they are increased by study, the disintegration of nervous tissue would be correspondingly *increased*; while if the *earthy* phosphates have this origin, then, as they are *diminished* under these circumstances, there must be *less* oxidation of these tissues when the mind is actively engaged. Consequently it would follow that the same law which the researches of Dr. Noyes and Dr. Parkes have shown to be true of muscular tissue, namely, that it grows during a state of active exercise, is true also of nervous tissue.

Now, inasmuch as the alkaline phosphates are not increased in any proportion to the amount of increase of mental labour; while the earthy phosphates are diminished in a very much greater proportion by the same means; it seems